

REMARKS

Summary of Office Action

Claims 1-35 are pending in the above-identified patent application.

The Examiner has rejected claims 1-3, 5, 6, 8, and 10 under 35 U.S.C. § 102(b) as being anticipated by Kronrod et al. U.S. Patent Application Publication 2002/0050827. Claims 4, 7, and 9 have been rejected under 35 U.S.C. § 103(a) as being obvious over Kronrod in view of Slemmer U.S. Patent 5,818,292. Claim 11 has been rejected as being obvious over Kronrod in view of Taylor U.S. Patent 6,157,206. Claims 13 and 14 have been rejected as being obvious over Kronrod in view of Koo U.S. Patent 6,236,584. Claims 17-19, 22, and 25 have been rejected as being obvious over Armstrong U.S. Patent 5,451,903 in view of Kronrod. Claim 20 has been rejected as being obvious over Armstrong in view of Kronrod and further in view of Jaussi U.S. Patent Application Publication 2003/0006747. Claims 21, 23, and 24 have been rejected as being obvious over Armstrong in view of Kronrod and further in view of Gist U.S. Patent 5,687,330. Claims 12, 15, and 16 have been objected to under 37 C.F.R. § 1.75(c) as being in improper form. The Examiner has also required an election of the invention further to the election of species.

Applicant's Reply to the Election Requirement

Independent claim 1 has been amended in order to more particularly define the invention. Applicant has canceled claims 4-16 without prejudice and has written new claims 36-40. In addition, applicant has withdrawn claims 26-35. The Examiner's rejections are respectfully traversed.

Applicant's Reply to the Election Requirement

Pursuant to a telephone conversation with the Examiner on June 20, 2003, Michael Shanahan (Reg. No. 43,914) orally elected group I - the species best illustrated by Fig. 1 - without traverse for prosecution in the above-identified

application. Applicant submits that claims 1-25 read on the elected species. Accordingly, applicant has withdrawn claims 26-35. Applicant expressly reserves the right to pursue the non-elected claims in one or more continuation or divisional applications that claim benefit and priority from this application.

Applicant's Reply to the
Claim Objections Under 37 C.F.R. § 1.75(c)

Claims 12, 15, and 16 have been objected to under 37 C.F.R. § 1.75(c) as being in improper form because "a multiple dependent claim should refer to the other claims in the alternative only." Applicant has canceled claims 4-16 without prejudice and has written new claims 36-40 as a substitute for the canceled claims. Accordingly, applicant submits that the objections to these claims should be withdrawn.

Applicant's Reply to the
Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-3, 5, 6, 8, and 10 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Kronrod. These rejections are respectfully traversed.

Claim 1 has been amended. The purpose of the amendment is not to overcome prior art but, rather, to more particularly define the invention. No new matter has been added by the amendment.

Independent claim 1, as amended, is directed to a method for determining a current supplied by an integrated circuit. The method comprises determining a voltage drop across a termination impedance with respect to a reference voltage, comparing a voltage drop across a first impedance on the integrated circuit with a voltage drop across a second impedance on the integrated circuit, wherein the first impedance is different from the second impedance, and processing information obtained in the determining and comparing steps to obtain a value for the supplied current.

In rejecting claim 1, the Examiner states that the claim is shown in paragraphs 34-43 of Kronrod (See Page 4, Listing 7).

Applicant respectfully disagrees for the reasons set forth below. Kronrod shows a system and method for measuring the power consumed by an integrated circuit on a printed circuit board ("PCB"). The differencing circuits shown in Kronrod are used to measure the voltage drop across the power strip and calibration strip and then output these measurements to the power determination circuit which determines the power consumed by the load. The output of the power determination circuit and thus of the system shown in Kronrod is a measurement of the core power of a circuit on a PCB and not a measurement of the supply current of an integrated circuit.

The invention as claimed in independent claim 1 requires processing information to obtain a value for the current supplied by an integrated circuit. Kronrod neither shows nor suggests a method for measuring current supplied by an integrated circuit. Furthermore, Kronrod neither shows or suggests a method for measuring current because Kronrod is directed to measuring the power consumed by an integrated circuit on a PCB (See Abstract). The Examiner has not identified any motivation or suggestion in Kronrod to measure the output current of an integrated circuit, and doing so would result in a completely different structure than that shown in Kronrod. Accordingly, Kronrod neither shows nor suggests the claimed invention.

For at least the above reasons, applicant respectfully submits that independent claim 1 is allowable. Furthermore, since independent claim 1 is allowable, claims 2 and 3, each of which depend directly or indirectly from claim 1, are allowable as well.

Applicant's Reply to the
Claim Rejections Under 35 U.S.C. § 103(a)

Claims 4, 7, and 9 have been rejected under 35 U.S.C. § 103(a) as being obvious over Kronrod in view of

Slemmer. Claim 11 has been rejected as being obvious over Kronrod in view of Taylor. Claims 13 and 14 have been rejected as being obvious over Kronrod in view of Koo. Claims 17-19, 22, and 25 have been rejected as being obvious over Armstrong in view of Kronrod. Claim 20 has been rejected as being obvious over Armstrong in view of Kronrod and further in view of Jaussi. Claims 21, 23, and 24 have been rejected as being obvious over Armstrong in view of Kronrod and further in view of Gist. These rejections are respectfully traversed.

Independent claim 17, as amended, is directed to a circuit that determines a current supplied by an integrated circuit. The circuit comprises an on-chip sensing impedance disposed on the integrated circuit, an on-chip modulation impedance, a first measurement device coupled to the modulation and sensing impedances configured to measure voltage drop across each impedance, an off-chip termination impedance, a second measurement device coupled to the termination impedance configured to measure voltage drop across each impedance, and processing circuitry configured to receive information from the first and second measurement devices and calculate supplied current therefrom.

In rejecting claim 17, the Examiner states that the claim is shown in Figure 3 of Armstrong in view of the Kronrod (See Page 6, Listing 12).

Applicant respectfully disagrees with respect to the rejections under 35 U.S.C. § 103(a). Applicant's position is based on the following section of the MPEP. The MPEP clearly states that "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." See MPEP §2143.

Applicant respectfully states that the neither Armstrong, Kronrod, nor any combination of the two, shows or suggests each of the limitations of the claimed invention. Armstrong, whether taken singly or in combination with Kronrod, does not show or suggest a circuit that determines a current supplied by an integrated circuit. Armstrong shows a push-pull amplifier that provides a stable, low distortion output drive from a low supply voltage by using negative feedback to reduce output impedance. It is not possible to measure the current supplied by the circuit by measuring the voltage drop across the components identified by the Examiner.

Specifically, the following components, each of which was identified by the Examiner, do not show, suggest, or make obvious in a way defined by the above-cited portion of the MPEP, a circuit according to the invention. Resistor 230 carries current to the input controller as well as to resistor 220 which controls the current which is supplied to the current generator. The voltage drop measurements across these two impedances can not be combined with a measurement of the voltage drop across termination impedance 160 in such a way as to determine the output current. The output current in Armstrong is determined by the sum of the branch currents that are provided by input controller 112 and current replicator 116, both of which are controlled by transistors. Since the impedance measurements identified by the Examiner can not be used without additional information to determine the branch currents and thus the output current of the circuit shown in Armstrong, Armstrong neither shows nor suggests the claimed invention.

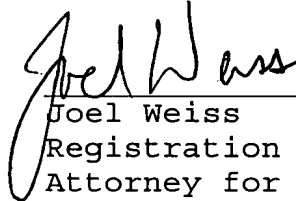
Moreover, Kronrod does not make up for the deficiencies of Armstrong. Kronrod is cited by the Examiner only for its teaching of measurement devices coupled to impedances. Finally, the Examiner does not provide a motivation to combine Armstrong and Kronrod. Thus, at least two of the three requirements for a rejection based on 35 U.S.C. § 103(a) have not been provided by the Examiner.

For at least the above reasons, applicant respectfully submits that independent claim 17 is allowable. Furthermore, since independent claims 1 and 17 are allowable, dependent claims 4, 7, 9, 11, 13, 14, and 17-25, each of which depend either directly or indirectly from claim 1 or 17, are allowable as well.

Conclusion

For the reasons set forth above, applicant respectfully submits that this application is in condition for allowance. Reconsideration and prompt allowance of this application are respectfully requested.

Respectfully submitted,



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